L Number	Hits	Search Text	DB	Time stamp
1	2	6436472.did.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:05
2	1713	"349" and (orientation adj film)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:07
3	18	"349" and (slit adj nozzle)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:08
4	1	("349" and (orientation adj film)) and ("349" and (slit adj nozzle))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:09
5	5	"349" and (slit adj coater)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:10
6	551	"118" and (orientation adj film)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:26
7	14	"118" and (slit adj coater)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:14
8	0	("118" and (orientation adj film)) and ("118" and (slit adj coater))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:12
9	0	(spray$6) near10 (orientation adj film) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:15
10	17	(orientation adj film) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:17
11	0	(orientation adj (material or film)) near10 (6436472.did.)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:18
12	474	(orientation adj (material or film)) near10 (thickness)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:19
13	1	(orientation adj (material or film)) near10 (constant or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:20
14	171	"118" and (slit adj nozzle)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:22

15	0	("118" and (orientation adj film)) and ("118" and (slit adj nozzle))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:22
16	0	(slit adj nozzle) near10 (film) near10 (surafce adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:27
17	0	(slit adj coater) near10 (film) near10 (surafce adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:27
18	0	(slit adj nozzle) near (film) near (surafce adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:27
19	0	(slit adj nozzle) near (film) near (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:28
20	0	(slit adj coater) near (film) near (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:28
21	2	(slit adj nozzle) near10 coating near10 tension	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:33
22	52721	(coating or film or material) near10 tension	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:45
23	14	((coating or film or material) near10 tension) and ("118" and (slit adj nozzle))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:05
24	2975	(coating or film or material) near10 (uniform or constant or maintian) near10 tension	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:48
25	4200	(coating or film or material) near10 (uniform or constant or maintain) near10 tension	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:51
26	2	("118" and (slit adj nozzle)) and ((coating or film or material) near10 (uniform or constant or maintain) near10 tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:52
27	352	(surface adj tension) near10 (material or film or coating) near10 (constant or maintian or uniform)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:53
28	476	(surface adj tension) near10 (material or film or coating) near10 (constant or maintain or uniform)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 16:55

29		2	("118" and (slit adj nozzle)) and ((surface adj tension) near10 (material or film or coating) near10 (constant or maintain or uniform))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:00
30		0	(slit adj nozzle) near (surface adj tension) near (coating adj material)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:01
31		19	"118" and ((uniform or constant) adj (surface adj tension))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:03
32		0	("118" and (slit adj nozzle)) and ("118" and ((uniform or constant) adj (surface adj tension)))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:03
33		0	(slit adj nozzle) near10 (constant or uniform or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:06
34		0	(slit adj coater) near10 (constant or uniform or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:08
35		0	(slit adj coater) near10 (constant or uniform or maintain) near10 (tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:08
36		0	(slit adj nozzle) near10 (constant or uniform or maintain) near10 (tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:09
37		3	(film adj formation) near10 (constant or uniform or maintain) near10 (tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:12
38		0	(film adj formation) near10 (constant or uniform or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:11
39		1	(extrusion) near10 (constant or uniform or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:12
40		38	(spray) near10 (constant or uniform or maintain) near10 (tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:13
41		15	(spray) near10 (constant or uniform or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:14
42		0	(spray) near10 film near10 (constant or uniform or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:14

43	0	(spray adj coating) near10 (uniform or constant or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:15
44	0	(spray adj coat) near10 (uniform or constant or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:16
45	0	(spray adj coater) near10 (uniform or constant or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:18
46	0	(slit adj coater) near10 (uniform or constant or maintain) near10 (surface adj tension)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 17:18
-	360	(349/123).CCLS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/07 15:55
-	12	(liquid crystal) adj (orientation film) adj (extrusion nozzle)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 14:53
-	1	(liquid crystal) adj (alignment) adj (extrusion nozzle)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 14:54
-	14	(liquid crystal) adj (substrate) adj (extrusion nozzle)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 14:56
-	0	(liquid crystal) adj (spacers) adj (extrusion nozzle)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 14:56
-	21	(spacers) adj (extrusion nozzle)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 14:56
-	1264	349/155	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 15:00
-	5	"5477356"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 15:16
-	126	TOK.AS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 15:18
-	2249	"Tokyo Ohka Kogyo".AS.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 15:19

-	2	"6436472"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 15:58
-	0	"6436472" near (alignment layer)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 15:59
-	0	"6436472" and (alignment layer)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 15:59
-	0	"6436472" adj (alignment layer)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 15:59
-	1364	(slit nozzle) adj (orientation film)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 16:06
-	2	(slit nozzle) adj (orientation film) adj (liquid crystal)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 16:08
-	2903	(slit nozzle) adj (liquid crystal)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 16:10
-	0	(liquid crystal) adj (laser) adj (patterning)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 17:20
-	42	(liquid crystal) adj (patterning)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/18 17:20
-	0	(eximer) adj (orientation film)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 09:04
-	1153	eximer	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 09:40
-	326	(orientation film) adj (0.8 micrometers)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 09:41
-	42	(liquid crystal) adj (patterning)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 10:12
-	0	(liquid crystal) adj (laser) adj (patterning)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 10:11

-	1229	(patterning)adj (alignment film)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 10:26
-	0	(eximer) adj (patterning)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 10:27
-	1	(eximer) near (patterning)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 10:27
-	0	(liquid crystal) near (eximer)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 10:30
-	0	(Laser) adj (film) adj (patterning)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 10:31
-	415	(Laser) adj (patterning)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 10:43
-	3	"6261856"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 10:43

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Set      Items   Description
S1       18164   ORIENTAT?(2N)(MATERIAL ? OR FILM?)
S2          22   SILT?(3N)NOZZLE?
S3     1703561   COATING? ? OR COAT? OR COATED OR PLATING? ?
S4       70176   SURFACE()TENSION?
S5     1862094   SPRAY? OR SCATTER? OR SPREAD?
S6     4187806   SUBSTRATE? OR IC OR WAFER? OR INTEGRATED()CIRCUIT? OR SEMI-
              CONDUCT? OR SEMI()CONDUCT?
S7       10068   S1 AND S6
S8          31   S7 AND S4
S9        4095   SLIT?(3N)NOZZLE?
S10          0   S8 AND S9
S11       2095   S7 AND S3
S12        153   S11 AND (S9 OR S5)
S13          0   S12 AND S4
S14          0   S1 AND S4  AND S9
S15       2282   S4 AND S3  AND FILM?
S16        583   S4(10N)S3(10N)FILM?
S17          2   S16 AND S9
S18          1   RD (unique items)
S19         16   S16 AND NOZZL?
S20         15   S19 NOT S18
S21         15   RD (unique items)
? s (constant? or stead? or stabl?)(3n)s4
         1751415  CONSTANT?
          454422  STEAD?
         1167881  STABL?
           70176  S4
     S22     849  (CONSTANT? OR STEAD? OR STABL?)(3N)S4
? s s22 and s3
             849  S22
         1703561  S3
     S23      46  S22 AND S3
```

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SYSTEM:OS  - DIALOG OneSearch
  File 315:ChemEng & Biotec Abs  1970-2003/Feb
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  File   2:INSPEC  1969-2003/Mar W1
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  File 347:JAPIO  Oct 1976-2002/Nov(Updated 030306)
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*File 347: JAPIO data problems with year 2000 records are now fixed.
Alerts have been run.  See HELP NEWS 347 for details.
  File 350:Derwent WPIX  1963-2003/UD,UM &UP=200316
         (c) 2003  Thomson Derwent
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See HELP ALERT and HELP PRINT for more info.
  File  99:Wilson Appl. Sci.& Tech Abs  1983-2003/Jan
         (c) 2003 The HW Wilson Co.
  File  94:JICST-EPlus  1985-2003/Mar W2
         (c)2003 Japan Science and Tech Corp(JST)
*File  94: UDs have been adjusted to reflect current months data. There is
no data missing.
  File  35:Dissertation Abs Online  1861-2003/Feb
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  File  65:Inside Conferences  1993-2003/Mar W2
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  File  34:SciSearch(R) Cited Ref Sci  1990-2003/Mar W1
         (c) 2003 Inst for Sci Info
*File  34: Alert feature enhanced for multiple files, duplicates
removal, customized scheduling. See HELP ALERT.
  File 434:SciSearch(R) Cited Ref Sci  1974-1989/Dec
         (c) 1998 Inst for Sci Info
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18/9/1 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

02340020 JICST ACCESSION NUMBER: 95A0540605 FILE SEGMENT: JICST-E
Gas Wiping Mechanism in Hot-Dip Coating Process.
TAKEISHI YOSHIAKI (1); YAMAUCHI AKIYOSHI (2); MIYAUCHI SUMITAKA (3)
(1) Sumitomo Met. Ind., Ltd., Kenkyu Kaihatsu Honbu; (2) Sumitomo Met. Ind., Ltd., Kashima Steel Work.; (3) Sumitomo Met. Ind., Ltd., Wakayama Steel Work.
Tetsu to Hagane(Journal of the Iron and Steel Institute of Japan), 1995, VOL.81,NO.6, PAGE.643-648, FIG.15, REF.14
JOURNAL NUMBER: F0332AAH ISSN NO: 0021-1575 CODEN: TEHAA
UNIVERSAL DECIMAL CLASSIFICATION: 621.793.5
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication
ABSTRACT: The liquid **film** flow on a strip steadily moving upward from a coating liquid bath in the gas wiping process for continuous hot-dip **coating** was analytically investigated assuming that the flow was time-independent and laminar and the **surface** **tension** was negligible. The **coating** thickness profile of the liquid **film** can be estimated by solving the equation of motion under the boundary conditions that both the impinging pressure and the shear stress of the gas wiping jet act on the liquid film surface. The analytical results of the coating thickness profiles agree well with the experimental results measured by the needle electrode method using glycerine-water solution. The analytical results were also compared with data obtained in a commercial hot-dip galvanizing line. It is confirmed that the effects of the line speed, the nozzle pressure, the nozzle-to-strip distance and the **nozzle** **slit** gap on the zinc coating weight can be explained well by the analysis and that the coating weight can be estimated within .+-.20% accuracy. (author abst.)
DESCRIPTORS: hot dip coating; plating thickness; film(cover); surface current(fluid); collision strength; shear strength; homogeneity; modeling; process control; jet(flow); film flow
BROADER DESCRIPTORS: plating; surface treatment; treatment; film thickness; thickness; length; geometric quantity; membrane and film; fluid flow; strength; mechanical property; property; operation(processing); control
CLASSIFICATION CODE(S): WC08026A
?

21/9/2 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO

05682605 **Image available**
DEVELOPING METHOD

PUB. NO.: 09-297405 [JP 9297405 A]
PUBLISHED: November 18, 1997 (19971118)
INVENTOR(s): HANEDA AKIO
DOCHI KATSUNORI
APPLICANT(s): TOPPAN PRINTING CO LTD [000319] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 08-113638 [JP 96113638]
FILED: May 08, 1996 (19960508)
INTL CLASS: [6] G03F-007/30; H01L-021/027
JAPIO CLASS: 29.1 (PRECISION INSTRUMENTS -- Photography & Cinematography); 14.2 (ORGANIC CHEMISTRY -- High Polymer Molecular Compounds); 42.2 (ELECTRONICS -- Solid State Components)
JAPIO KEYWORD: R011 (LIQUID CRYSTALS); R044 (CHEMISTRY -- Photosensitive Resins)

ABSTRACT
PROBLEM TO BE SOLVED: To form the uniform liquid film of a developer, to reduce nonuniform development and to effectively remove the residue by providing an auxiliary developing stage for using and then discarding a developer before or after regular development.

SOLUTION: An auxiliary developing stage for using and then discarding a developer is provided before or behind a developing chamber A for regular development. A curtain-flow **nozzle** 2a for uniformly discharging a developer 1, for example, in the form of curtain is furnished to a developing chamber B provided before the developing chamber A, the developer is dripped on a body 4 to be developed, and the dripped waste liquid is used, discarded and subjected to waste liquid treatment. The developer is sprayed from the **nozzle** 2a on the body 4 almost without any surplus pressure but only by gravity. Consequently, the developer 1 is not immediately scattered from the body 4 surface by the pressure of the developer 1 itself, and the developer 1 is softly retained on the body 4 surface by **surface tension** to form a **coating film** .

21/9/3 (Item 3 from file: 347)
DIALOG(R)File 347:JAPIO

05564508 **Image available**
COATING DEVICE OF PHOTORESIST

PUB. NO.: 09-179308 [JP 9179308 A]
PUBLISHED: July 11, 1997 (19970711)
INVENTOR(s): SAEKI MASAHIKO
KOIZUMI TOYOHARU
APPLICANT(s): HITACHI CABLE LTD [000512] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 07-340700 [JP 95340700]
FILED: December 27, 1995 (19951227)
INTL CLASS: [6] G03F-007/16; B05C-001/08; B05C-011/06; H01L-021/027
JAPIO CLASS: 29.1 (PRECISION INSTRUMENTS -- Photography & Cinematography); 14.7 (ORGANIC CHEMISTRY -- Coating Material Adhesives); 42.2

(ELECTRONICS -- Solid State Components)
JAPIO KEYWORD:R119 (CHEMISTRY -- Heat Resistant Resins)

ABSTRACT

PROBLEM TO BE SOLVED: To obtain uniform thickness of a coating resist film and to perform complete etching.
SOLUTION: This coating device of a photoresist is used to continuously apply a photosensitive photoresist liquid 4 on the surface of a metal foil laminated on an insulating film 1. Air is blown from a compressor 16 through an air **nozzle** 11 to the resist **film** 8 applied on the surface of the metal foil. Air is blown to both sides of the **film** where the **coating** **film** easily builds up due to **surface** **tension** in such a manner that the air blown just after **coating** gives force to the resist **film** against the **surface** **tension** . Thus, the resist **film** is made flat, and as a result, a good wire pattern can be obtained

21/9/7 (Item 7 from file: 347)
DIALOG(R)File 347:JAPIO

03197070 **Image available**
SPIN COATING METHOD

PUB. NO.: 02-172570 [JP 2172570 A]
PUBLISHED: July 04, 1990 (19900704)
INVENTOR(s): TAKEDA HIDEO
APPLICANT(s): FUJI PHOTO FILM CO LTD [000520] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 63-326103 [JP 88326103]
FILED: December 26, 1988 (19881226)
INTL CLASS: [5] B05D-001/40
JAPIO CLASS: 14.7 (ORGANIC CHEMISTRY -- Coating Material Adhesives)
JOURNAL: Section: C, Section No. 761, Vol. 14, No. 439, Pg. 101, September 19, 1990 (19900919)

ABSTRACT

PURPOSE: To obtain a uniform coating film having no coating irregularity by preventing the involution of air and the splashing of a liquid by prescribing the relation between the flow velocity of a coating solution and the caliber of a **nozzle** on the basis of the physical properties of the coating solution itself according to a specific formula.

CONSTITUTION: When a pump is operated, the coating solution in a tank is introduced into the pump on the suction side thereof through a conduit and a filter and sent out under pressure therefrom on the sucking-out side thereof. At this time, the flow velocity V of the coating solution in a **nozzle** and the caliber D of the **nozzle** are prescribed to the relation represented by formula I on the basis of the specific gravity .rho., viscosity .eta. and **surface** **tension** .gamma. of the **coating** solution. By this method, the involution of air or splashing of the **coating** solution is not generated and a coating **film** having universality and no coating irregularity can be formed, and the yield and quality of a product are enhanced and operability is also enhanced.

21/9/10 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014922541 **Image available**
WPI Acc No: 2002-743248/200281
XRPX Acc No: N02-585422

Development method for photoresist in semiconductor manufacture involves coating photoresist with thin film **and heaped developer using** surface tension

Patent Assignee: HITACHI LTD (HITA)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 6112117	A	19940422	JP 92261860	A	19920930	200281	B

Priority Applications (No Type Date): JP 92261860 A 19920930
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 6112117	A		15	H01L-021/027	

Abstract (Basic): JP 6112117 A

NOVELTY - Covering a photoresist with a thin film, patterning and developing the thin film by heaping up a developer using surface tension, then washing off the developer using a rinse head and spin drying process.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for a substrate developer with a chamber for applying the photoresist and thin film layer, with a supply **nozzle** to apply the developer. A chuck holds the substrate and a second chamber, or second area of the same chamber, contains a shower **nozzle** to clean off the developer.

USE - Used in developing photoresist layers for semiconductor manufacture.

DESCRIPTION OF DRAWING(S) - The drawing shows a cross section of the development equipment.

pp; 15 DwgNo 3/6

Title Terms: DEVELOP; METHOD; PHOTORESIST; SEMICONDUCTOR; MANUFACTURE; COATING; PHOTORESIST; THIN; FILM; HEAP; DEVELOP; SURFACE; TENSION
Derwent Class: U11
International Patent Class (Main): H01L-021/027
File Segment: EPI
Manual Codes (EPI/S-X): U11-A11; U11-C06A1B; U11-C09X

21/9/11 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

007671432
WPI Acc No: 1988-305364/198843
XRAM Acc No: C88-135424
XRPX Acc No: N88-231448

Nozzle **plate coating for ink jet printing head - contg. smooth ultra-thin film of poly-dimethyl-polysiloxane on silicon substrate prepd. by spin-coating**

Patent Assignee: ANONYMOUS (ANON)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
RD 293018	A	19880910				198843	B

Priority Applications (No Type Date): RD 88293018 A 19880820

Abstract (Basic): RD 293018 A

Ink jet **nozzle** coating comprising a smooth, ultra thin film of a polydimethylsiloxane (PDMS) on a silicon substrate prepd. by spin-coating is described. This film gives 0.06 dynamic coefft. of friction against paper, the lowest value ever reported for polymer-paper sliding pairs. The value is about 1/3 of the coefft. of friction (0.21) between PTFE and paper. The coating is not scratchable by sliding a stainless steel stylus over the surface with a pressure greater than 3.6 x 10 power 10 dynes/cm2. The film displays a surface tension of 20.5 dynes/cm. It is stable in water and propylene glycol. The film is durable solid lubricant. The surface characteristics of a spray-coated PDMS and a plasma copolymerised thin film of perfluoropropane and 3,3,3-trifluoropropylmethyldimethoxysilane have also been investigated. Both **films** show lower scratch resistance, weaker adhesion to the silicon substrate, and high friction. The plasma **film** yields the same **surface tension** as the spin- **coated** PDMS. Its surface energy increases after soaking in water or propylene glycol. The low friction and high scratch resistance of the ultrathin film of PDMS are due to the absence of deformation and tearing components and a low adhesion component in the sliding friction mechanism.

Title Terms: **NOZZLE** ; PLATE; COATING; INK; JET; PRINT; HEAD; CONTAIN; SMOOTH; ULTRA; THIN; FILM; POLY; DI; METHYL; POLYSILOXANE; SILICON; SUBSTRATE; PREPARATION; SPIN; COATING
Derwent Class: A26; A97; G02; P75; T04
International Patent Class (Additional): B41J-000/01
File Segment: CPI; EPI; EngPI
Manual Codes (CPI/A-N): A06-A00E4; A12-W07F; G05-F
Manual Codes (EPI/S-X): T04-G02
Plasdoc Codes (KS): 0231 1306 2423 2440 2608 2609 2622 2654 2658 3252 2661 2662 2729 2814
Polymer Fragment Codes (PF):
001 014 04- 05- 229 38- 431 433 445 477 54& 541 548 549 551 560 561 575 596 597 599 600 602 603 659 720

21/9/13 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

04058227 Genuine Article#: RB425 Number of References: 9
Title: GAS WIPING MECHANISM IN HOT-DIP COATING PROCESS
Author(s): TAKEISHI Y; YAMAUCHI A; MIYAUCHI S
Corporate Source: SUMITOMO MET IND LTD,IRON & STEEL RES LABS,16-1OAZA SUNAYAMA/HASAKI/IBARAKI 31402/JAPAN/; SUMITOMO MET IND LTD,KASHIMA STEEL WORKS/KASHIMA//JAPAN/; SUMITOMO MET IND LTD,WAKAYAMA STEEL WORKS/WAKAYAMA//JAPAN/
Journal: TETSU TO HAGANE-JOURNAL OF THE IRON AND STEEL INSTITUTE OF JAPAN, 1995, V81, N6 (JUN), P643-648
ISSN: 0021-1575
Language: JAPANESE Document Type: ARTICLE
Geographic Location: JAPAN
Subfile: SciSearch; CC ENGI--Current Contents, Engineering, Technology & Applied Sciences
Journal Subject Category: METALLURGY & METALLURGICAL ENGINEERING
Abstract: The liquid **film** flow on a strip steadily moving upward from a coating liquid bath in the gas wiping process for continuous hot-dip **coating** was analytically investigated assuming that the flow was time-independent and laminar and the **surface tension** was negligible. The **coating** thickness profile of the liquid **film** can be estimated by solving the equation of motion under the boundary

conditions that both the impinging pressure and the shear stress of the gas wiping jet act on the liquid film surface. The analytical results of the coating thickness profiles agree well with the experimental results measured by the needle electrode method using glycerine-water solution. The analytical results were also compared with data obtained in a commercial hot-dip galvanizing line. it is confirmed that the effects of the line speed, the **nozzle** pressure, the nozzle -to-strip distance and the **nozzle** slit gap on the zinc coating weight can be explained well by the analysis and that the coating weight can be estimated within +/-20% accuracy.
Descriptors--Author Keywords: HOT-DIP COATING ; GAS WIPING ; THIN FILM FLOW ; IMPINGING JET ; IMPINGING WALL PRESSURE ; SHEAR STRESS ; COATING THICKNESS ; CONTINUOUS GALVANIZING LINE
Cited References:
BELTAOS S, 1976, V102, P1177, J HYDR DIV ASCE
BELTAOS S, 1973, V11, P29, J HYDRAUL RES
BUTLER JJ, 1970, V47, P77, IRON STEEL ENG
EDWARDS WJ, 1976, V12, P225, AUTOMATICA
ELLEN CH, 1984, V106, P399, ASME
HRBEK A, 1961, V7, P298, MET FINISH
THORNTON JA, 1976, V7, P607, METALL T B
TUCK EO, 1984, V30, P808, AICHE J
TUCK EO, 1983, V26, P2352, PHYS FLUIDS
?

27/9/1 (Item 1 from file: 315)
DIALOG(R)File 315:ChemEng & Biotec Abs

454343 CEABA Accession No.: 30-03-003751 DOCUMENT TYPE: Journal
Title: Computational analysis of slot coating **on a tensioned web.**
AUTHOR: Feng J.Q.
CORPORATE SOURCE: Xerox Corp. Wilson Centre Res. Technol. Webster, NY 14580 USA
JOURNAL: AIChE J., Volume: 44, Issue: 10, Page(s): 2137-2143
CODEN: AICEAC ISSN: 00011541
PUBLICATION DATE: Oct 1998 (19981000) LANGUAGE: English
ABSTRACT: The elastohydrodynamic interaction between the tensioned-web deformation and the viscous liquid flow in the **coating** bead was studied by finite element computational analysis. The elastohydrodynamic effects in tensioned-web slot **coating** are examined in relation to variations of the liquid feeding rate and externally applied web tension, web wrap angle and other variables. The shape of the flexible web was determined by a normal balance stress equation, similar to that of the free surface of **coating** flow with a **constant surface tension** .
DESCRIPTORS: English ; **coatings** ; computational fluid dynamics ; elasticity ; **film** flow ; hydrodynamics ; surface tension
SECTION: Fluid Flow (06)
SECTION CROSS-REFERENCE: Fluid Dynamics (31)
DECHEMA CLASSIFICATION: Fluid flow, single and multiphase systems, rheology, non-Newtonian fluids (1232); Flow of single and multiphase systems (511)

27/9/2 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

5935925 INSPEC Abstract Number: A9814-6146-008, B9807-2520D-044
Title: CdS nanocrystal growth in thin silica films **: evolution of size distribution function**
Author(s): Lublinskaya, O.; Gurevich, S.; Ekimov, A.; Kudryavtsev, I.; Osinskii, A.; Gandais, M.; Wang, Y.
Author Affiliation: A.F. Ioffe Phys. Inst., Acad. of Sci., St. Petersburg, Russia
Journal: Journal of Crystal Growth Conference Title: J. Cryst. Growth (Netherlands) vol.184-185 p.360-4
Publisher: Elsevier,
Publication Date: 6 Feb. 1998 Country of Publication: Netherlands
CODEN: JCRGAE ISSN: 0022-0248
SICI: 0022-0248(19980206)184/185L.360:NGTS;1-R
Material Identity Number: J037-98009
U.S. Copyright Clearance Center Code: 0022-0248/98/$19.00
Conference Title: Eighth International Conference on II-VI Compounds
Conference Date: 25-29 Aug. 1997 Conference Location: Grenoble, France
Document Number: S0022-0248(97)00673-8
Language: English Document Type: Conference Paper (PA); Journal Paper (JP)
Treatment: Experimental (X)
Abstract: The kinetics of semiconductor nanocrystal formation and growth as a result of solid solution phase decomposition in semiconductor-doped thin silica **films** fabricated by a co-sputtering technique was investigated. Two regimes of decomposition, attributed to the stages of nucleation and of growth at the expense of dissolved matter, were studied.

The shape of the nanocrystal size distribution was investigated in the various stages of the phase decomposition process. Various parameters of the decomposition process including **surface tension** of nanocrystals, diffusion **constant** , characteristic time of decomposition were estimated. (9 Refs)

Subfile: A B

Descriptors: absorption coefficients; annealing; cadmium compounds; crystallites; decomposition; II-VI semiconductors; insulating thin **films** ; nanostructured materials; nucleation; semiconductor growth; silicon compounds; sputtered **coatings** ; surface diffusion; surface tension; transmission electron microscopy

Identifiers: semiconductor nanocrystal formation; size distribution function; nanocrystal growth; semiconductor-doped thin silica **films** ; cosputtering technique; decomposition; nucleation; dissolved matter; surface tension; diffusion constant; II-VI semiconductors; 1025 C; 800 C; 5 min to 10 h; 900 C; 1 h; 1050 C; 2 h; 4 to 6 nm; CdS; SiO/sub 2/; CdS-SiO/sub 2

Class Codes: A6146 (Solid clusters (including fullerenes) and nanoparticles); A6170A (Annealing processes); A6170N (Grain and twin boundaries); A6475 (Solubility, segregation, and mixing); A6480G (Microstructure); A6822 (Surface diffusion, segregation and interfacial compound formation); A6855 (Thin film growth, structure, and epitaxy); A7820D (Optical constants and parameters); A8115C (Deposition by sputtering); B2520D (II-VI and III-V semiconductors); B2550A (Annealing processes for semiconductor devices)

Chemical Indexing:

CdS bin - Cd bin - S bin (Elements - 2)

SiO2 bin - O2 bin - Si bin - O bin (Elements - 2)

CdS-SiO2 int - SiO2 int - CdS int - Cd int - O2 int - Si int - O int - S int - SiO2 bin - CdS bin - Cd bin - O2 bin - Si bin - O bin - S bin (Elements - 2,2,4)

Numerical Indexing: temperature 1.30E+03 K; temperature 1.07E+03 K; time 3.0E+02 to 3.6E+04 s; temperature 1.17E+03 K; time 3.6E+03 s; temperature 1.32E+03 K; time 7.2E+03 s; size 4.0E-09 to 6.0E-09 m

27/9/3 (Item 2 from file: 2)

DIALOG(R)File 2:INSPEC

03898380 INSPEC Abstract Number: B91038492

Title: Modelling fusible CVD glass planarization flow contours

Author(s): White, L.K.

Author Affiliation: SRI Int., Princeton, NJ, USA

Conference Title: 1990 Proceedings. Seventh International IEEE VLSI Multilevel Interconnection Conference (Cat. No.90TH0325-1) p.377-9

Publisher: IEEE, New York, NY, USA

Publication Date: 1990 Country of Publication: USA 494 pp.

U.S. Copyright Clearance Center Code: TH-0325-1/90/0000-0377$01.00

Conference Sponsor: IEEE

Conference Date: 12-13 June 1990 Conference Location: Santa Clara, CA, USA

Language: English Document Type: Conference Paper (PA)

Treatment: Theoretical (T)

Abstract: A comparison between experimental and simulated fusible chemical vapor deposition (CVD) glass planarization flow contours is presented. The simulated contours assume Newtonian viscous flow and a hydrostatic pressure gradient caused by the surface tension and the radius of curvature of the contour. At long flow lengths, >or=100 mu m, reasonable agreement between experiment and simulation is obtained. Assuming no change

in **film** **surface** **tension** , the flow rate **constant** increase is directly related to a tenfold decrease in **film** viscosity at the higher flow temperature. (4 Refs)
Subfile: B
Descriptors: CVD **coatings** ; flow simulation; glass; modelling; surface tension; surface treatment; viscosity of liquids
Identifiers: fusible CVD glass planarization; flow contours; chemical vapor deposition; simulated contours; Newtonian viscous flow; hydrostatic pressure gradient; surface tension; **film** viscosity
Class Codes: B2550E (Surface treatment and oxide film formation); B0520F (Vapour deposition); B0570 (Glasses)

27/9/4 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05616341 E.I. No: EIP00085271488
Title: Magnetic semiconductor thin films **of CdCr//2// minus //2//** xIn **//2//xSe//4 in spin glass state**
Author: Maksymowicz, L.J.; Lubecka, M.; Jablonski, R.
Corporate Source: Univ of Mining and Metallurgy, Krakow, Pol
Conference Title: 14th International Symposium on Soft Magnetic Materials (SMM14)
Conference Location: Balatonfured, Hung Conference Date: 19990908-19990910
Sponsor: Hungarian Academy of Sciences; OMBF (Hungary); EPS; Magnet-Technologies (Germany); et al.
E.I. Conference No.: 57027
Source: Journal of Magnetism and Magnetic Materials v 215 2000. p 579-581
Publication Year: 2000
CODEN: JMMMDC ISSN: 0304-8853
Language: English
Document Type: JA; (Journal Article) Treatment: X; (Experimental)
Journal Announcement: 0009W2
Abstract: Diluted by indium, **the** chalcogenide spinel CdCr//2// minus //2//xIn//2//xSe//4 is in an SG state. The temperature dependence of the **magnetization** (M) with comparison to the ordered magnetic state is modified by non-zero density of states in the energy band gap. Also, the unidirectional magnetic anisotropy is attributed to the SG state due to the Dzyaloshinskii-Moriya (DM) interaction. The investigated samples of **CdCr** //2// minus //2//xIn//2//xSe//4 were **obtained** by an RF sputtering technique. We **present** the temperature (from 5 to 160 K) dependence of M, unidirectional magnetic anisotropy field H//a// **n** and surface magnetic anisotropy **constant** K// **s** **t. **The** **mag**netic parameters were determined from the temperature dependence of the ferromagnetic resonance (FMR) and spin wave resonance (SWR) data. (Author abstract) 6 Refs.
Descriptors: Magnetic **semiconductors** ; **Semiconducting** cadmium compounds; Thin **films** ; Glass; Magnetization; Electronic density of states ; Energy gap; Magnetic anisotropy; Magnetron sputtering; Thermal effects
Identifiers: Cadmium chromium indium **selenide** ; Chalcogenide; **Spin** wave resonance
Classification Codes:
712.1.2 (Compound Semiconducting Materials)
708.4 (Magnetic Materials); 712.1 (Semiconducting Materials); 812.3 (Glass); 701.2 (Magnetism: Basic Concepts & Phenomena); 931.3 (Atomic & Molecular Physics)
708 (Electric & Magnetic Materials); 712 (Electronic & Thermionic Materials); 812 (Ceramics & Refractories); 701 (Electricity & Magnetism); 931 (Applied Physics)

70 (ELECTRICAL ENGINEERING); 71 (ELECTRONICS & COMMUNICATIONS); 81 (CHEMICAL PROCESS INDUSTRIES); 93 (ENGINEERING PHYSICS)

27/9/5 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

04107436 E.I. No: EIP95032619988
Title: Modeling of coating **flows on curved surfaces**
Author: Schwartz, L.W.; Weidner, D.E.
Corporate Source: Univ of Delaware, Newark, DE, USA
Source: Journal of Engineering Mathematics v 29 n 1 Jan 1995. p 91-103
Publication Year: 1995
CODEN: JLEMAU ISSN: 0022-0833
Language: English
Document Type: JA; (Journal Article) Treatment: T; (Theoretical)
Journal Announcement: 9505W2
Abstract: The equations describing the temporal evolution of a thin, Newtonian, viscous liquid layer are extended to include the effect of substrate curvature. It is demonstrated that, subject to the standard assumptions required for the validity of lubrication theory, the surface curvature is equivalent to an applied time-independent overpressure distribution. Within the mathematical model, a variety of substrate shapes, possessing both 'inside' and 'outside' corners, are shown to be equivalent. Starting with an initially uniform **coating** layer, the evolving **coating** profile is calculated for substrates with piecewise **constant** curvature. Ultimately, **surface tension** forces drive the solutions to stable minimum-energy configurations. For small time, the surface profile history, for a substrate with a single curvature discontinuity, is given as the self-similar solution to a linear fourth-order diffusive equation. Using a Fourier transform, the solution to the linear problem is found as a convergent infinite series. This Green's function generates the general solution to the linearized problem for arbitrary substrate shapes. Calculated solutions to the non-linear problem are suggestive of **coating** defects observed in industrial applications. (Author abstract) 12 Refs.
Descriptors: Mathematical models; **Coatings** ; Flow of fluids; Thin **films** ; Surfaces; Surface tension; Substrates; Lubrication; Fourier transforms; Green's function
Identifiers: **Coating** flow; Curved surfaces; Linear fourth-order diffusive equation; Thin Newtonian viscous liquid layer; Convergent infinite series; **Coating** defects
Classification Codes:
921.6 (Numerical Methods); 813.2 (Coating Materials); 631.1 (Fluid Flow, General); 931.2 (Physical Properties of Gases, Liquids & Solids); 607.2 (Lubrication); 921.3 (Mathematical Transformations)
921 (Applied Mathematics); 813 (Coatings & Finishes); 631 (Fluid Flow & Hydrodynamics); 931 (Applied Physics); 607 (Lubricants & Lubrication)
92 (ENGINEERING MATHEMATICS); 81 (CHEMICAL PROCESS INDUSTRIES); 63 (FLUID DYNAMICS & VACUUM TECHNOLOGY); 93 (ENGINEERING PHYSICS); 60 (MECHANICAL ENGINEERING)

27/9/6 (Item 3 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

03463790 E.I. Monthly No: EI9208100396
Title: Flow properties and contour modeling of fusible borophosphosilicate glasses.

Author: White, L. K.; Miszkowski, N. A.; Kurylo, W. A.; Shaw, J. M.
Corporate Source: SRI Intl Princeton, NJ, USA
Source: Journal of the Electrochemical Society v 139 n 3 Mar 1992 p 822-826
Publication Year: 1992
CODEN: JESOAN ISSN: 0013-4651
Language: English
Document Type: JA; (Journal Article) Treatment: T; (Theoretical); X; (Experimental)
Journal Announcement: 9208
Abstract: The viscous flow properties of fusible borophosphosilicate glasses (BPSG) deposited on polysilicon topography are analyzed. A model assuming Newtonian viscous flow and a driving force caused by the surface tension and the radius of curvature of the contour is used. The model uses the equation A//f equals A//0 exp (minus k//0 gamma h**3t/ eta lambda **4) where, k//0 is a **constant** , gamma is the **surface tension** , h the deposited **film** thickness, t the flow time, eta the viscosity, and lambda the periodicity of a sinusoidal surface oscillation with an initial amplitude, A//0, and final amplitude, A//f. Experimental results are presented to verify the derived relationships between the deposited **film** thickness and the periodicity of the topography. Comparisons between experimental and simulated contours are made. At long flow lengths, greater than equivalent to 150 mu m, as defined by a flow rate constant and the flow time, reasonable agreement between experiment and simulation is obtained. Flow rate constants for representative BPSG glasses are reported for various flow temperatures. (Author abstract) 19 Refs.
Descriptors: GLASS--*Molten; FLOW OF FLUIDS--Viscous; LIQUIDS--Newtonian; SEMICONDUCTING SILICON-- **Coatings** ; FLUID DYNAMICS--Mathematical Models
Identifiers: CONTOUR MODELING; BOROPHOSPHOSILICATE GLASSES
Classification Codes:
812 (Ceramics & Refractories); 631 (Fluid Flow & Hydrodynamics); 921 (Applied Mathematics); 931 (Applied Physics); 712 (Electronic & Thermionic Materials)
81 (CHEMICAL PROCESS INDUSTRIES); 63 (FLUID DYNAMICS & VACUUM TECHNOLOGY); 92 (ENGINEERING MATHEMATICS); 93 (ENGINEERING PHYSICS); 71 (ELECTRONICS & COMMUNICATIONS)

27/9/7 - (Item 4 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

01902268 E.I. Monthly No: EIM8510-065503
Title: NEW APPROACHES TO THE PROBLEM OF CORROSION PROTECTION BY MEANS OF ORGANIC COATINGS **.**
Author: Imai, Takeo
Corporate Source: Kansai Paint Co, Hiratsuka, Jpn
Conference Title: Organic Coatings, Science and Technology, Volume 6. (Papers presented at the Eighth International Conference in Organic Coatings Science and Technology.)
Conference Location: Athens, Greece Conference Date: 19820712
E.I. Conference No.: 06838
Source: Organic Coatings, Science and Technology v 6. Publ by Marcel Dekker Inc, New York, NY, USA and Basel, Switz p 325-350
Publication Year: 1984
CODEN: ORGCD8 ISBN: 0-8247-7044-7
Language: English
Document Type: PA; (Conference Paper)
Journal Announcement: 8510
Abstract: The resistivity against permeation of corrosive materials and the adhesion of **films** to substrates are considered to be the essential

functions required for anti-corrosive **coatings** . In order to elucidate the roles played by these functions, double-layer **coatings** were employed in this study. It was found that the stress-relaxation property as well as the barrier effect to oxygen permeation are required for the bulk portion of **coatings** , and hydrogen-bonding capability of **coated films** has played a major role at the interface between **coatings** and substrates. 8 refs.

Descriptors: PROTECTIVE **COATINGS** ; CORROSION PROTECTION; ADHESION--Testing; PHENOLS

Identifiers: SALT FOG TESTS; NATURAL WEATHERING TEST; P-SUBSTITUTED PHENOLS; HAMMETT'S ACIDITY **CONSTANT** ; **SURFACE TENSION** ; HATA'S EQUATION

Classification Codes:

813 (Coatings & Finishes); 539 (Metals Corrosion & Protection); 802 (Chemical Apparatus & Plants); 804 (Chemical Products)

81 (CHEMICAL PROCESS INDUSTRIES); 53 (METALLURGICAL ENGINEERING); 80 (CHEMICAL ENGINEERING)

27/9/8 (Item 1 from file: 347)

DIALOG(R)File 347:JAPIO

07082737

METHOD FOR PRODUCING HEAT-SEALABLE/NON-HEAT-SEALABLE BIAXIALLY ORIENTED POLYPROPYLENE **FILMS** APPLICABLE TO WATER BASE INK PRINTING AND METALLIZING TREATMENT SUCH AS VACUUM **PLATING** , AND PRODUCT PRODUCED THEREBY

PUB. NO.: 2001-310384 [JP 2001310384 A]
PUBLISHED: November 06, 2001 (20011106)
INVENTOR(s): RIN HOKIN
APPLICANT(s): NAN YA PLAST CORP
APPL. NO.: 2000-129165 [JP 2000129165]
FILED: April 28, 2000 (20000428)
INTL CLASS: B29C-055/14; C08J-007/00; B29K-023:00; B29L-009:00

ABSTRACT

PROBLEM TO BE SOLVED: To obtain a biaxially oriented polypropylene **film** which has **stable surface tension** and excellent flatness and is applicable to water base ink printing and a metallizing product such as vacuum **plating** which is required for high sticking strength and adhesive force to aluminum foil.

SOLUTION: The printing surface or surface to be a **plating** surface of the coextruded biaxially oriented polypropylene **film** comprising three layers in which an antistatic agent and an antisticking agent are mixed in a polypropylene homopolymer is subjected to flame treatment by the combustion flame of liquefied natural gas containing at least 85% of methane under conditions of a polarization voltage of 0.1-0.8 kV, the optimum voltage of 0.2 kV, the temperature of a cooling roll of 20-50°C, the optimum temperature of 25°C, the temperature of flame of 700-900°C, and the optimum temperature 760°C.

27/9/9 (Item 2 from file: 347)

DIALOG(R)File 347:JAPIO

02301567

RELEASE LINER AND DOUBLE- **COATED** PRESSURE-SENSITIVE TAPE OF SHEET OBTAINED

BY USING THE SAME

PUB. NO.: 62-218467 [JP 62218467 A]
PUBLISHED: September 25, 1987 (19870925)
INVENTOR(s): YABE NAOTO
APPLICANT(s): TOYO INK MFG CO LTD [352425] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 61-060732 [JP 8660732]
FILED: March 20, 1986 (19860320)
INTL CLASS: [4] C09J-007/02; B32B-007/06; C08J-005/18; C08L-023/02; C09J-007/02; C08L-023/02; C08L-083/04
JAPIO CLASS: 14.7 (ORGANIC CHEMISTRY -- **Coating** Material Adhesives); 14.2 (ORGANIC CHEMISTRY -- High Polymer Molecular Compounds
JOURNAL: Section: C, Section No. 481, Vol. 12, No. 82, Pg. 137, March 15, 1988 (19880315)

ABSTRACT

PURPOSE: To provide a release liner having a low **surface tension** and a **stable** peel strength, by molding a mixture of a polyolefin resin and a silicone resin into a **film** .

CONSTITUTION: 100pts.wt. polyolefin resin (A) (e.g., low-density PE resin) is mixed with 0.01-20pts.wt., preferably 0.1-10pts.wt. high-molecular compound (B) having an organopolysiloxane structure, preferably rubbery silicone resin (e.g., silicone rubber) and optionally, a lubricant (e.g., stearic acid), a filler (e.g., BaSO(sub 4)) and a colorant (C) to obtain a mixture. The mixture is molded at 140-180 deg.C into a **film** of 1-500.mu. in thickness, thus obtaining a release liner. A pressure-sensitive adhesive is applied to both sides of a nonwoven fabric, a plastic **film** or an expanded plastic sheet to form a pressure-sensitive adhesive layer of 10-100.mu. in thickness. The resulting tape or sheet is laminated onto said release liner and wound into a roll.

27/9/10 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014835292 **Image available**
WPI Acc No: 2002-655998/200270
Related WPI Acc No: 2002-178643
XRAM Acc No: C02-184150
XRPX Acc No: N02-518462

Improving thermal fatigue life of thermal barrier coating **system to protect gas turbine engine components involves flattening grain boundary ridges by peening and depositing thermal barrier** coating

Patent Assignee: SPITSBERG I T (SPIT-I)
Inventor: SPITSBERG I T
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20020094447	A1	20020718	US 2000569912	A	20000511	200270	B
			US 200250659	A	20020116		

Priority Applications (No Type Date): US 2000569912 A 20000511; US 200250659 A 20020116
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20020094447	A1		10	B32B-015/04	Div ex application US 2000569912

Abstract (Basic): US 20020094447 A1

NOVELTY - Improving thermal fatigue life of a thermal barrier **coating** system involves depositing bond **coat** on component, which are columnar grains; peening surface of bond **coat** at preset intensity to flatten grain boundary ridge(s) to form flattened grain boundary surfaces; and depositing thermal barrier **coating** on bond **coat** surface. The bond **coat** is deposited such that they have columnar grain structure.

DETAILED DESCRIPTION - Method of improving the thermal fatigue life of a thermal barrier **coating** system involves depositing bond **coat** on component, peening the surface of bond **coat** at preset intensity to flatten at least some of grain boundary ridges to form flattened grain boundary surfaces and depositing thermal barrier **coating** on the surface of bond **coat** . The bond **coat** is deposited such that they produce columnar grains. The columnar grains extend substantially through that portion of the bond **coat** overlying the surface of component. The grains have grain boundaries exposed at the surface of the bond **coat** and the grain boundaries define grain boundary ridges at the surface of bond **coat** . The thermal barrier **coating** system comprises a thermal barrier **coating** adhered to a diffusion aluminide bond **coat** on the surface of a component. The bond **coat** is single-phase aluminide, two-phase aluminide, platinum aluminide bond **coat** or overlay aluminide bond **coat** .

An INDEPENDENT CLAIM is included for a thermal barrier **coating** system.

USE - Improving thermal fatigue life of thermal barrier **coating** system used to protect gas turbine components such as high and low pressure turbine **nozzles** and blades, shrouds, combustible liners and augmentor hardware of glass turbine engines.

ADVANTAGE - The flattened grain boundaries are much less prone to accelerated oxidation than the original grain boundaries. The surface modification significantly inhibits thermal grooving and thermal creep that has been determined to initiate and/or rapidly progress at grain boundaries exposed at the bond **coat** surface. A lower oxidation rate at the grain boundaries may eliminate a cause for the creation of stress concentration sites for enhanced localized creep and oxide crack initiation at the bond **coat** surface which are believed to cause the alumina layer to convolute and fracture. The modified bond **coat** grain configuration exhibits more **stable surface tension** conditions, which slow the thermal grooving effect. By eliminating or at least inhibiting the formation of sites where deformation of the alumina layer occurs, and thus where a fracture ultimately initiates and develops with thermal cycling, the spallation life of the thermal barrier **coating** adhered by the bond **coat** is significantly increased.

DESCRIPTION OF DRAWING(S) - The figure shows the high pressure turbine blade.

pp; 10 DwgNo 1/7

Title Terms: IMPROVE; THERMAL; FATIGUE; LIFE; THERMAL; BARRIER; **COATING** ; SYSTEM; PROTECT; GAS; TURBINE; ENGINE; COMPONENT; FLATTEN; GRAIN; BOUNDARY; RIDGE; PEEN; DEPOSIT; THERMAL; BARRIER; **COATING**

Derwent Class: G02; M13; P42; P73

International Patent Class (Main): B32B-015/04

International Patent Class (Additional): C23C-016/00

File Segment: CPI; EngPI

Manual Codes (CPI/A-N): G02-A05; M13-E

27/9/11 (Item 2 from file: 350)

DIALOG(R)File 350:Derwent WPIX

013376323 **Image available**
WPI Acc No: 2000-548261/200050
XRPX Acc No: N00-405571

Digital micromirror manufacture method involves patterning and etching of metal layer over spacer

Patent Assignee: TEXAS INSTR INC (TEXI)
Inventor: KAERIYAMA T
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6099132	A	20000808	US 94311480	A	19940923	200050	B
			US 95483777	A	19950607		

Priority Applications (No Type Date): US 94311480 A 19940923; US 95483777 A 19950607
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6099132	A		7	G02B-007/182	Div ex application US 94311480

Abstract (Basic): US 6099132 A

NOVELTY - Activation circuitry is formed on a semiconductor wafer with a pad **film** acting as insulator between two differently biased surfaces. The pad **film** has a spacer layer with vias cut into it which are filled by a layer of metal laid over the spacer layer. Another metal layer over the first is patterned and etched to form mirrors and hinges. The spacer layer is then removed.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for a digital micro mirror.

USE - For manufacturing a digital micro mirror.

ADVANTAGE - Moving parts do not stick together.

DESCRIPTION OF DRAWING(S) - The drawing shows a possibility for the placement of a protective **coating** relative to the activation circuitry of a micromechanical device.

Landing electrodes (404a, b)

Addressing electrodes (408a, b)

pp; 7 DwgNo 4D/4

Technology Focus:

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - The pad **film** can be made of an oxide or a nitride, with the properties of low **surface tension** , **stable** up to 110degreesC, high abrasion and humidity resistance, and high surface stability.

Title Terms: DIGITAL; MANUFACTURE; METHOD; PATTERN; ETCH; METAL; LAYER; SPACE
Derwent Class: P81; U11; U12
International Patent Class (Main): G02B-007/182
File Segment: EPI; EngPI
Manual Codes (EPI/S-X): U11-C18C; U12-B03F

27/9/12 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

011564280
WPI Acc No: 1997-540761/199750
XRAM Acc No: C97-173094
XRPX Acc No: N97-450097

Prodn. of photographic material - by simultaneously coated **on**

continuing base films **by using a curtain** coating **device**
Patent Assignee: KONICA CORP (KONS)
Inventor: FUKAZAWA K; KONDO Y; NISHIWAKI A
Number of Countries: 002 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 9258368	A	19971003	JP 9664418	A	19960321	199750	B
US 5871821	A	19990216	US 97823884	A	19970317	199914	

Priority Applications (No Type Date): JP 9664418 A 19960321
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 9258368	A		4	G03C-001/74	
US 5871821	A			B05D-001/30	

Abstract (Basic): JP 9258368 A
At least three layers of **coating** solns. are simultaneously **coated** on continuing base **films** by using a curtain **coating** device. The intermediate layer of the **coating** soln. has dynamic surface tension higher than that of the outer layer of the **coating** soln.
ADVANTAGE - Specifying the relation in each **coating** soln. of the dynamic **surface tension stably** forms a curtain **film** to produce the photographic material having stable **coating** . No new facilities or modifications in the prodn. equipment are required.
Dwg.0/2
Title Terms: PRODUCE; PHOTOGRAPH; MATERIAL; SIMULTANEOUS; **COATING** ; CONTINUE; BASE; **FILM** ; CURTAIN; **COATING** ; DEVICE
Derwent Class: G06; P42; P83
International Patent Class (Main): B05D-001/30; G03C-001/74
International Patent Class (Additional): B05C-005/00
File Segment: CPI; EngPI
Manual Codes (CPI/A-N): G06-A10; G06-C14; G06-E04

27/9/13 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX

011420527
WPI Acc No: 1997-398434/199737
XRAM Acc No: C97-128167
XRPX Acc No: N97-331594
Mould release film **used as protecting** film **- obtained by laying at least one face of polyethylene naphthalate** film **with mould release layer**
Patent Assignee: TEIJIN LTD (TEIJ)
Number of Countries: 001 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 9174779	A	19970708	JP 95343047	A	19951228	199737	B
JP 3126647	B2	20010122	JP 95343047	A	19951228	200112	

Priority Applications (No Type Date): JP 95343047 A 19951228
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 9174779	A		7	B32B-027/36	
JP 3126647	B2		7	B32B-027/36	Previous Publ. patent JP 9174779

Abstract (Basic): JP 9174779 A
A mould release **film** is obtained by laying at least one face of

(A) a **film** composed of polyethylene-2,6-naphthalate with (B) a mould release layer whose maximum surface tension, obtained from gamma 1 max= 1/b + gamma c/2 (I), is 50-90 dyne/cm. gamma 1 max = maximum **surface tension** : b = **constant** obtained from Zisman plot; and gamma c = critical surface tension.
USE - Used as a protecting **film** for a pressure sensitive adhesive **coat** .
Dwg.0/0
Title Terms: MOULD; RELEASE; **FILM** ; PROTECT; **FILM** ; OBTAIN; LAY; ONE; FACE; POLYETHYLENE; NAPHTHALATE; **FILM** ; MOULD; RELEASE; LAYER
Derwent Class: A23; A81; G03; P73
International Patent Class (Main): B32B-027/36
International Patent Class (Additional): B32B-027/00
File Segment: CPI; EngPI
Manual Codes (CPI/A-N): A05-E05A; A08-M03; A12-A01A; G02-A05E; G03-B04
Polymer Indexing (PS):
<01>
001 018; S9999 S1285-R; S9999 S1581; P1989 P1978 P0839 H0293 D01 D10 D11 D18 D20 D32 D50 D63 D93 D78 E00 E22 F41 F90
002 018; ND01; ND07; Q9999 Q7818-R; N9999 N7192 N7023; K9698 K9676; K9701 K9676
003 018; N9999 N7090 N7034 N7023; N9999 N7147 N7034 N7023; B9999 B5447 B5414 B5403 B5276
<02>
001 018; S9999 S1581; P0000
002 018; ND01; ND07; Q9999 Q7818-R; N9999 N7192 N7023; K9698 K9676; K9701 K9676
003 018; N9999 N7147 N7034 N7023; K9712 K9676; Q9999 Q7205 Q7114; B9999 B5390 B5276
<03>
001 018; P0000
002 018; ND01; ND07; Q9999 Q7818-R; N9999 N7192 N7023; K9698 K9676; K9701 K9676
003 018; Q9999 Q6677 Q6644; B9999 B5301 B5298 B5276; K9574 K9483; Q9999 Q7114-R

27/9/14 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX

011082919
WPI Acc No: 1997-060843/199706
XRAM Acc No: C97-019790
XRPX Acc No: N97-050390
Mould-releasable film **as protecting** film **for adhesive** coats **- obtd. by applying mould-releasable layer having specified max. surface tension to mould-releasable** film
Patent Assignee: TEIJIN LTD (TEIJ)
Number of Countries: 001 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 8309943	A	19961126	JP 95124864	A	19950524	199706	B
JP 3126628	B2	20010122	JP 95124864	A	19950524	200112	

Priority Applications (No Type Date): JP 95124864 A 19950524
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 8309943	A		6	B32B-027/36	
JP 3126628	B2		6	B32B-027/00	Previous Publ. patent JP 8309943

Abstract (Basic): JP 8309943 A

A mould-releasable **film** is obtd. by applying to at least one face of a polyester **film** a mould-releasable layer of 0.1-0.4 microns centre line average height and a 50-90 dyne/cm of max. surface tension of formula (I) gammal max = 1/b + gammac/2 (I), gammal max. max. **surface tension** ; b = **constant** obtd. from a Zisman plot; and gamma C = critical surface tension.

USE - As a protecting **film** for aq. pressure sensitive adhesive **coats** .

Dwg.0/0

Title Terms: MOULD; RELEASE; **FILM** ; PROTECT; **FILM** ; ADHESIVE; **COAT** ; OBTAIN; APPLY; MOULD; RELEASE; LAYER; SPECIFIED; MAXIMUM; SURFACE; TENSION; MOULD; RELEASE; **FILM**
Derwent Class: A23; A94; G03; P73
International Patent Class (Main): B32B-027/00; B32B-027/36
International Patent Class (Additional): B32B-007/06
File Segment: CPI; EngPI
Manual Codes (CPI/A-N): A05-E01D3; A12-A01A; A12-S06; G03-B04
Polymer Indexing (PS):
<01>
001 018; S9999 S1285-R; P0839-R F41 D01 D63
002 018; Q9999 Q6633; K9676-R; K9687 K9676; K9712 K9676; K9574 K9483; ND01; B9999 B5323 B5298 B5276
003 018; A999 A351 A340; B9999 B5390 B5276
<02>
001 018; P0000; S9999 S1025 S1014; S9999 S1616 S1605
002 018; Q9999 Q6633; K9676-R; K9687 K9676; K9712 K9676; K9574 K9483; ND01; B9999 B5323 B5298 B5276
003 018; Q9999 Q6677 Q6644
004 018; A999 A351 A340; B9999 B5390 B5276
005 018; R01740 G2335 D00 F20 H- O- 6A; A999 A475

27/9/15 (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX

011082910
WPI Acc No: 1997-060834/199706
XRAM Acc No: C97-019781
XRPX Acc No: N97-050381

Mould-releasable film **for aq. pressure sensitive** coats **- obtd. by laying at least one face of polyester** film **with mould-releasable layer.**

Patent Assignee: TEIJIN LTD (TEIJ)
Number of Countries: 001 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 8309933	A	19961126	JP 95119970	A	19950518	199706	B
JP 3103007	B2	20001023	JP 95119970	A	19950518	200056	

Priority Applications (No Type Date): JP 95119970 A 19950518
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 8309933	A		5	B32B-027/00	
JP 3103007	B2		5	B32B-027/00	Previous Publ. patent JP 8309933

Abstract (Basic): JP 8309933 A

A mould-releasable **film** is obtd. by laying at least one face of a polyester **film** with a mould-releasable layer of 30-50 dyne/cm in the

max. surface tension obtd. from expression (I).

gammal max = 1/b + gammac/2 (I)

gammal max = max. **surface tension** : b = **constant** obtd. from a Zisman plot; and gammac= critical surface tension.

USE - As a protecting **film** for aq. press. sensitive **coats** .

Dwg.0/0

Title Terms: MOULD; RELEASE; **FILM** ; AQUEOUS; PRESSURE; SENSITIVE; **COAT** ; OBTAIN; LAY; ONE; FACE; POLYESTER; **FILM** ; MOULD; RELEASE; LAYER
Derwent Class: A23; A94; G03; P73
International Patent Class (Main): B32B-027/00
International Patent Class (Additional): B32B-027/36
File Segment: CPI; EngPI
Manual Codes (CPI/A-N): A05-E01D; A08-M03B; A12-A01A; A12-A05; G03-B01; G03-B02; G03-B04
Polymer Indexing (PS):
<01>
001 018; P0000
002 018; Q9999 Q6677 Q6644; B9999 B5390 B5276; ND01
003 018; A999 A351 A340
<02>
001 018; P1978-R P0839 D01 D50 D63 F41; S9999 S1285-R; A999 A351 A340; A999 A782

27/9/16 (Item 7 from file: 350)
DIALOG(R)File 350:Derwent WPIX

003337177
WPI Acc No: 1982-J5190E/198228
Ink supply system for ink jet system printer - has heat generating pipe to maintain constant **viscosity and** surface tension **of ink supplied**
Patent Assignee: NIPPON TELEGRAPH & TELEPHONE CORP (NITE); SHARP KK (SHAF)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 4337469	A	19820629				198228	B

Priority Applications (No Type Date): JP 74103311 A 19740906
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 4337469	A		9		

Abstract (Basic): US 4337469 A

The inner surface of the heat generating pipe (52) is **coated** with an electrically insulating thin **film** (54) made of, for example, glass. The thin **film** (54) functions to electrically insulate the ink liquid from the heat generating pipe (52) and to prevent the creation of electrolyzed impurities within the ink liquid. Terminals (56,58) of the heat generating pipe (52) are connected with output terminals of a control circuit which control the ink liquid temperature.

A protect sensor (60) made of, for example, a positive temperature coefficient thermistor is attached to the centre portion of the outer surface of the heat generating pipe (52) to inhibit the accidental temperature rise of the heat generating pipe (52) thus preventing the occurrence or creation of bubbles in the ink liquid and protecting the thin **film** (54) from being damaged. Terminals (62,64) of the protect sensor (60) are connected with terminals in the control circuit.

3

Title Terms: INK; SUPPLY; SYSTEM; INK; JET; SYSTEM; PRINT; HEAT; GENERATE; PIPE; MAINTAIN; CONSTANT; VISCOSITY; SURFACE; TENSION; INK; SUPPLY
Derwent Class: S02; T04
International Patent Class (Additional): G01D-015/18
File Segment: EPI
Manual Codes (EPI/S-X): S02-K06B2; T04-G02

27/9/17 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

05138932 JICST ACCESSION NUMBER: 02A0165832 FILE SEGMENT: JICST-E
Effect of oxygen partial pressure of ambinet atmosphere on surface tension and marangoni convection of molten silicon.
HIBIYA TAKETOSHI (1); AZAMI TAKESHI (1); MUKAI KATSUHIRO (2)
(1) NEC Corp., Foundamental Res. Lab.; (2) Kyushu Inst. of Technol., Fac. of Eng.
Thermophys Prop, 2001, VOL.22nd, PAGE.280-282, FIG.4, REF.6
JOURNAL NUMBER: X0031AAB ISSN NO: 0911-1743
UNIVERSAL DECIMAL CLASSIFICATION: 544.72-14-16 532.529+532.546 548.5:621.315.592
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Conference Proceeding
ARTICLE TYPE: Short Communication
MEDIA TYPE: Printed Publication
ABSTRACT: The effect of oxygen partial pressure of ambient atmosphere on surface tension, its temperature coefficient and the Marangoni flow of molten silicon is discussed. Surface tension measured in an atmosphere with carefully controlled oxygen partial pressure shows a marked dependence on oxygen partial pressure. Below the equilibrium oxygen partial pressure for the SiO2 phase, Po2(SiO2), surface tension decreased with increasing Po2. Above the Po2(SiO2), **surface tension** looks **constant** regardless of Po2, or increases with Po2 slightly. This suggests that bellow the Po2 (SiO2) a surface of molten silicon is bare adsorbed with oxygen atmos, whereas above the Po2(SiO2) a surface would be **coated** with a thin SiO2 **film** . When three phases(melt, solid and gas) coexist, the Gibbs' thermodynamical freedom becomes unity; oxygen concentration in the melt is **constant** ; thus **surface tension** is **constant** . Therefore, even though the temperature coefficients of surface tension for molten silicon of less than |.PDRV..SIGMA./.PDRV.T|<0.2*10-3N/m-K, which have been often reported, can be obtained above the Po2(SiO2), these values should not be used for numerical calculation for the Marangoni flow of molten silicon. Through the above context the Marangoni flow on the flat melt surface contained within a silica crucible for the Czochralski system is discussed. A thermal inverse layer is formed on the strong buoyancy flow vortex due to strong radiation heat loss from the surface. The thermocapillary effect due to the temperature difference between the crucible wall and the growing crystal causes the MArangoni flow. Also the solutocapillary effect due to the oxygen concentration difference causes the MArangoni flow. Oxygen concentration is maximum and constant at the crucible wall, where the Gibbs' thermodynamical freedom is unity. Due to evaporation of SiO, oxygen concentration is diluted near the growing crystal.... (author abst.)
DESCRIPTORS: silicon; liquid semiconductor; interfacial tension; temperature dependence; oxygen; partial pressure; Marangoni effect; Czochralski method; floating zone melting
IDENTIFIERS: Marangoni convection; oxygen partial pressure
BROADER DESCRIPTORS: third row element; element; carbon group element; liquid; semiconductor; tension(force); force; mechanical quantity;

dependence; oxygen group element; second row element; pressure; effect; crystal pulling method; liquid phase growth; crystal growth; zone melting; purification; melting process
CLASSIFICATION CODE(S): CB12050B; BC02060J; BK13040X

27/9/18 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

10266539 Genuine Article#: 504BB Number of References: 52
Title: Slowly accreting ice due to supercooled water impacting on a cold surface
Author(s): Myers TG (REPRINT) ; Charpin JPF; Thompson CP
Corporate Source: Univ Cape Town,Dept Math & Appl Math,ZA-7701 Rondebosch//South Africa/ (REPRINT); Univ Cape Town,Dept Math & Appl Math,ZA-7701 Rondebosch//South Africa/; Cranfield Univ,Appl Math & Comp Grp,Cranfield MK43 0AL/Beds/England/
Journal: PHYSICS OF FLUIDS, 2002, V14, N1 (JAN), P240-256
ISSN: 1070-6631 Publication date: 20020100
Publisher: AMER INST PHYSICS, CIRCULATION & FULFILLMENT DIV, 2 HUNTINGTON QUADRANGLE, STE 1 N O 1, MELVILLE, NY 11747-4501 USA
Language: English Document Type: ARTICLE
Geographic Location: South Africa; England
Journal Subject Category: MECHANICS; PHYSICS, FLUIDS & PLASMAS
Abstract: A theoretical model for ice growth due to droplets of supercooled fluid impacting on a subzero substrate is presented. In cold conditions rime (dry) ice forms and the problem reduces to solving a simple mass balance. In milder conditions glaze (wet) ice forms. The problem is then governed by coupled mass and energy balances, which determine the ice height and water layer thickness. The model is valid for "thin" water layers, such that lubrication theory may be applied and the Peclet number is small; it is applicable to ice accretion on stationary and moving structures. A number of analytical solutions are presented. Two- and three-dimensional numerical schemes are also presented, to solve the water flow equation, these employ a flux-limiting scheme to accurately model the capillary ridge at the leading edge of the flow. The method is then extended to incorporate ice accretion. Numerical results are presented for ice growth and water flow driven by gravity, **surface tension** , and a **constant** air shear. <(C)> 2002 American Institute of Physics.
Identifiers--KeyWord Plus(R): HYPERBOLIC CONSERVATION-LAWS; HIGH-RESOLUTION SCHEMES; DYNAMIC CONTACT LINES; THIN LIQUID- **FILMS** ; ADVANCING FRONT; **COATING** FLOWS; ICING MODEL; DRIVEN FLOW; AIR-FLOW; SOLIDIFICATION
Cited References:
ARNOLD K, 1997, V6, P120, METEOROL Z
BARTLETT P, 1990, P 9 INT WORKSH ATM I
BERTOZZI AL, 1998, P689, NOTICES AMS JUN
BERTOZZI AL, 1997, V9, P530, PHYS FLUIDS
BOURGAULT Y, 2000, V37, P640, J AIRCRAFT
BOWEN M, 1999, MI2899 LEID U
CRAIK ADD, 1966, V26, P369, J FLUID MECH
DAVISON AE, 1930, V49, P1444, A I ELECT ENG T
DEFINA A, 2000, V36, P3251, WATER RESOUR RES
DUSSAN EB, 1979, V11, P371, ANNU REV FLUID MECH
ELLIOT S, 1992, FLIGHT INT 0429
ERES HM, 1998, P1859, LANGMUIR
FARZANEH M, 2000, V358, P2971, PHILOS T ROY SOC A
FOWLER AC, 1997, MATH MODELS APPL SCI
FRIGAARD IA, 1997, V31, P411, J ENG MATH
GENT RW, 2000, V358, P2873, PHILOS T ROY SOC A

GENT RW, 1990, 90054 RAE TR
GREENSPAN HP, 1978, V84, P125, J FLUID MECH
GUTIERREZMIRAVE.E, 1989, V20, P71, METALL TRANS A
HARTEN A, 1997, V135, P260, J COMPUT PHYS
HEDDE T, 1995, V33, P1038, AIAA J
HUGHES D, 1994, V140, P46, AVIAT WEEK SPACE TEC
KATAOKA DE, 1998, V203, P335, J COLLOID INTERF SCI
KATAOKA DE, 1997, V192, P350, J COLLOID INTERF SCI
KING AC, 1993, V5, P973, PHYS FLUIDS A-FLUID
LEVEQUE RJ, 1990, NUMERICAL METHODS CO
LISTER JR, 1996, V323, P267, J FLUID MECH
LISTER JR, 1994, V272, P21, J FLUID MECH
LOWE PR, 1976, V16, P100, J APPL METEOROL
LOZOWSKI EP, 2000, V358, P2811, PHILOS T ROY SOC A
MAKKONEN L, 1988, V34, P1, J GLACIOL
MAKKONEN L, 1991, P575, WIND ENERGY TECHNOLO
MAKKONEN L, 2000, V358, P2913, PHILOS T ROY SOC A
MIDDLEMAN S, 1987, V62, P2530, J APPL PHYS
MORIARTY JA, 1991, V3, P733, PHYS FLUIDS A-FLUID
MYERS TG, 1999, V42, P2233, INT J HEAT MASS TRAN
MYERS TG, 1998, V40, P441, SIAM REV
MYERS TG, 2001, V39, P211, AIAA J
POOTS GI, 1996, ICE SNOW ACCRETION S
RUFF GA, 1990, 185129 NASA CR
SCHWARTZ LW, 1995, V29, P91, J ENG MATH
SPAID MA, 1996, V8, P460, PHYS FLUIDS
STOEV K, 1998, V10, P1793, PHYS FLUIDS
SWEBY PK, 1984, V21, P995, SIAM J NUMER ANAL
THOMAS SK, 1996, V33, P841, J AIRCRAFT
TORO EF, 1997, RIEMANN SOLVERS NUME
TSAO JC, 1997, V26, P427, COMPUT FLUIDS
TUCK EO, 1990, V32, P453, SIAM REV
WEIDNER DE, 1996, V179, P66, J COLLOID INTERF SCI
WRIGHT WB, 1997, CR202349 NASA
YANG HQ, 1992, V102, P139, J COMPUT PHYS
YIH CS, 1990, V212, P41, J FLUID MECH

27/9/19 (Item 2 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

08832621 Genuine Article#: 335FJ Number of References: 33
Title: The rate of spreading in spin coating
Author(s): Wilson SK (REPRINT) ; Hunt R; Duffy BR
Corporate Source: UNIV STRATHCLYDE,DEPT MATH, LIVINGSTONE TOWER, 26 RICHMOND ST/GLASGOW G1 1XH/LANARK/SCOTLAND/ (REPRINT)
Journal: JOURNAL OF FLUID MECHANICS, 2000, V413 (JUN 25), P65-88
ISSN: 0022-1120 Publication date: 20000625
Publisher: CAMBRIDGE UNIV PRESS, 40 WEST 20TH STREET, NEW YORK, NY 10011-4211
Language: English Document Type: ARTICLE
Geographic Location: SCOTLAND
Subfile: CC PHYS--Current Contents, Physical, Chemical & Earth Sciences; CC ENGI--Current Contents, Engineering, Computing & Technology
Journal Subject Category: MECHANICS; PHYSICS, FLUIDS & PLASMAS
Abstract: In this paper we reconsider the fundamental problem of the centrifugally driven spreading of a thin drop of Newtonian fluid on a uniform solid substrate rotating with **constant** angular speed when **surface - tension** and moving-contact-line effects are significant. We discuss analytical solutions to a number of problems in the case of no

surface tension and in the asymptotic limit of weak surface tension, as well as numerical solutions in the case of weak but finite surface tension, and compare their predictions for the evolution of the radius of the drop (prior to the onset of instability) with the experimental results of Fraysse & Homsy (1994) and Spald & Homsy (1997). In particular, we provide a detailed analytical description of the no-surface-tension and weak-surface-tension asymptotic solutions. We demonstrate that, while the asymptotic solutions do indeed capture many of the qualitative features of the experimental results, quantitative agreement for the evolution of the radius of the drop prior to the onset of instability is possible only when weak but finite surface-tension effects are included. Furthermore, we also show that both a fixed- and a specific variable-contact-angle condition (or 'Tanner law') are capable of reproducing the experimental results well.
Identifiers--KeyWord Plus(R): DYNAMIC CONTACT LINES; THIN LIQUID- **FILMS** ;
ROTATING-DISK; DROPS; INSTABILITY; STABILITY; FLUID; FLOW; SURFACES;
RIVULET
Cited References:
ANDERSON DM, 1995, V7, P248, PHYS FLUIDS
BERTOZZI AL, 1997, V9, P530, PHYS FLUIDS
BRAUN RJ, 1995, V7, P1797, PHYS FLUIDS
BRENNER MP, 1993, V47, P4597, PHYS REV E
DUFFY BR, 1997, V10, P63, APPL MATH LETT
EHRHARD P, 1994, V168, P242, J COLLOID INTERF SCI
EHRHARD P, 1991, V229, P365, J FLUID MECH
EMSLIE AG, 1958, V29, P858, J APPL PHYS
FRAYSSE N, 1994, V6, P1491, PHYS FLUIDS
GREENSPAN HP, 1978, V84, P125, J FLUID MECH
HOCKING LM, 1992, V239, P671, J FLUID MECH
HOCKING LM, 1994, V6, P3224, PHYS FLUIDS
HOCKING LM, 1983, V36, P55, Q J MECH APPL MATH
HUPPERT HE, 1982, V300, P427, NATURE
LARSON RG, 1997, P709, LIQUID FILM COATING
LOPEZ PG, 1996, V324, P261, J FLUID MECH
LOPEZ PG, 1997, V9, P2177, PHYS FLUIDS
LOPEZ PG, 1997, 9605 NW U
MCKINLEY IS, 1999, V11, P30, PHYS FLUIDS
MELO F, 1989, V63, P1958, PHYS REV LETT
MOMONIAT E, 1998, V33, P1069, INT J NONLINEAR MECH
MORIARTY JA, 1991, V3, P733, PHYS FLUIDS A-FLUID
ORON A, 1997, V69, P931, REV MOD PHYS
SHIKHMURZAEV YD, 1997, V334, P211, J FLUID MECH
SHIKHMURZAEV YD, 1997, V9, P266, PHYS FLUIDS
SPAID MA, 1996, V8, P460, PHYS FLUIDS
SPAID MA, 1997, V9, P823, PHYS FLUIDS
TROIAN SM, 1989, V10, P25, EUROPHYS LETT
TU YO, 1987, V116, P237, J COLLOID INTERF SCI
WILSON SK, 1998, V10, P13, PHYS FLUIDS
WILSON SK, 1996, P288, 1 EUR COAT S MECH TH
YANAGISAWA M, 1987, V61, P1034, J APPL PHYS
YOUNG GW, 1994, P1, FREE BOUNDARIES VISC

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Title: THE LEVELING OF PAINT FILMS
Author(s): WILSON SK
Corporate Source: UNIV STRATHCLYDE,DEPT MATH,LIVINGSTONE TOWER,26RICHMOND

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Abstract: Using a brush to apply paint to a flat surface almost inevitably means that the bristles of the brush leave behind an uneven paint surface. As the paint dries out, these non-uniformities tend to flatten out to leave a protective and aesthetically pleasing even **coating** ; however, experiments have shown that some solvent-based high-gloss alkyd paints can exhibit more unusual behaviour as they dry. In these experiments the initial rate of levelling was faster than that expected simply due to **constant surface tension** effects, and, much more unexpectedly, over a timescale of a few minutes the peaks of the original disturbance became troughs and vice versa. In this paper the author presents a mathematical model for the drying of a layer of solvent-based high-gloss alkyd paint and analyses the linear stability of a uniform layer of paint subject to an initial perturbation representing the marks left by a paint brush. Investigating the model highlights the crucial role played by solvent evaporation and leads to a plausible physical explanation of the observed phenomena. Furthermore, the analytical and numerical predictions of the model are found to be in good quantitative agreement with the experimental results.
Identifiers--KeyWords Plus: LIQUID- **FILMS** ; STABILITY
Cited References:
BURELBACH JP, 1988, V195, P463, J FLUID MECH
DAVIS SH, 1983, P291, WAVES FLUID INTERFAC
OVERDIEP WS, 1986, V14, P1, PROG ORG COAT
OVERDIEP WS, 1986, V14, P159, PROG ORG COAT
OVERDIEP WS, 1978, V2, P683, VG LEVICH FESTSCHRIF
REISFELD B, 1991, V70, P5267, J APPL PHYS
SCHWARTZ LW, 1992, UNPUB NUMERICAL SIMU
SMITH NPD, 1961, V44, P618, J OIL COLOUR CHEM AS
VANDERHOUT R, 1992, UNPUB LEVELLING PAIN
?

L11 ANSWER 1 OF 3 CAPLUS

AN 1989:214788 CAPLUS
DN 110:214788

TI Scratch-resistant low-friction/low-surface-energy coating for silicon substrate

AU Chen, H. H.
CS Gen. Prod. Div., IBM Corp., Boulder, CO, 80301-9191, USA

SO Journal of Applied Polymer Science (1989), 37(2), 349-64
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DT Journal
LA English

AB A smooth, ultrathin film of a di-Me siloxane (I) on a Si substrate is prepd. by spin-coating. This film gives a 0.06 dynamic coeff. of friction against paper, which is only about 1/3 of the coeff. of friction (0.21) between PTFE and paper. The coating is not scratchable by sliding a stainless steel stylus over the surface with a pressure >3.6 .times. 1010 dyn/cm2. The film displays a surface tension of 20.5 dyn/cm. It is stable in water and propylene glycol. The film is an effective and durable solid lubricant. The surface characteristics of a **spray** -coated I and a plasma-copolymd. thin film of perfluoropropane and 3,3,3-trifluoropropylmethyldimethoxysilane are also investigated. Both films show much lower scratch resistance, weaker adhesion of the Si substrate, and higher friction. The plasma **film** yields the same **surface tension** as the spin-**coated** I. Its surface energy, however, increases after soaking in water or propylene glycol. The exceptionally low friction and the unusually high scratch resistance of the ultrathin film of I are attributed to the absence of deformation and tearing components and a low adhesion component in the sliding friction mechanism.